

## AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1-35 (Canceled)

36. (New) A method of accessing the transport header of packets, comprising the steps of:

- (a) reading header information and, if said packet includes extension headers, building a cache key from said header information;
- (b) using said cache key to perform a cache lookup;
- (c) if no extension header data is found in a cache, performing a serial traversal of said extension headers and storing data read from said extension headers in said cache;
- (d) if extension header data is found in said cache, using said extension header data to load said extension headers in parallel in order to reduce a time required to traverse said extension headers.

37. (New) The method defined in claim 36, wherein the packet is an IPv6 packet.

38. (New) The method defined in claim 36, wherein said cache key is built from two fields of the Internet header of the packet.

39. (New) The method defined in claim 38, wherein the two fields used to build the cache key are an IP source address field and a flow label field for packets that have a flow label, and an IP source field and a destination address field for packets that do not have a flow label.

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40. (New) The method defined in claim 36, wherein the cache key is built from a source address, a flow label, and a next header, or from source and destination addresses and a next header.

41. (New) The method defined in claim 36, wherein the cache lookup is performed using a table containing lengths of extension headers.

42. (New) The method defined in claim 36, wherein said extension headers include a first extension header and additional extension headers, and where said first extension header is read while said cache lookup is being performed on said additional extension headers.

43. (New) The method defined in claim 36, further comprising the step of, if a subsequent packet has a same cache key but additional extension headers, serially traversing said additional extension headers and updating said extension header data by storing additional extension header data.

44. (New) The method defined in claim 36, further comprising the step of detecting whether a packet includes hop-by-hop and routing extension headers and omitting steps (c) and (d) if said hop-by-hop and routing extension headers are detected.

45. (New) The method defined in claim 36, wherein if a subsequent packet has a same cache key as a packet for which extension header data is stored in said cache but the extension header data does not match extension headers in the subsequent packet, skipping step (d) and instead performing a serial traversal of said extension headers in the subsequent packet.

46. (New) A system for accessing the transport header of packets, comprising:  
an extension header data cache;  
means for reading header information and, if said packet includes extension headers, building a cache key from said header information;  
means for using said cache key to perform a cache lookup;

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means for, if no extension header data is found in said cache, performing a serial traversal of said extension headers and storing data read from said extension headers in said cache;

means for, if extension header data is found in said cache, using said extension header data to load said extension headers in parallel in order to reduce a time required to traverse said extension headers.